

APPENDIX B

Clean copy of all claims currently pending:

1. A superconducting cable, comprising:

(a) a core member; and

(b) a first high temperature superconducting wire wrapped helically around the core member, where the first high temperature superconducting wire comprises

(i) a first high temperature superconducting component having a first end and a second end;

(ii) a layer of a first nonsuperconducting solder material, a portion of the solder layer attached to at least a portion of the first end of first high temperature superconducting component; and

(iii) a second high temperature superconducting component having a first end and a second end, at least a portion of the first end of the second high temperature superconducting component attached to a portion of the solder layer,

wherein the portion of the first high temperature superconducting component attached to the solder material and the portion of the second high temperature superconducting component attached to the solder material form an overlap segment;

wherein the shape of the first end of at least one of the first and second high temperature superconducting components is adapted to minimize strain concentration of said wires.

2. The cable of claim 1, further comprising at least one protective layer connected to the first ends of the first and second high temperature superconducting components.

3. The cable of claim 1, wherein a section of the first superconducting wire having a length at least 100 times the length of the overlap segment has a critical current at least 80% of the lesser of critical currents of the first and second high temperature superconducting components, where critical current is determined using a 1 μ V/cm criterion.

4. The cable of claim 1, further comprising a second high temperature superconducting wire wrapped helically around the core, where the first and second high temperature superconducting wires have opposite helicity.

5. The cable of claim 1, wherein the first high temperature superconducting wire is wrapped around the core with a constant pitch, and the shape of the first ends of the first and second high temperature superconducting components are adapted to minimize strain concentrations in the first high temperature superconducting wire.

6. The cable of claim 1, wherein the first end of the first high temperature superconducting component is substantially triangular.

7. The cable of claim 6, wherein the first end of the second high temperature superconducting component is substantially triangular.

8. The cable of claim 1, wherein the first end of the first high temperature superconducting component is substantially diagonal.

9. The cable of claim 8, wherein the first end of the second high temperature superconducting component is substantially diagonal.

10. The cable of claim 1, wherein the first end of the first high temperature superconducting component is substantially inverted triangular.

11. The cable of claim 10, wherein the first end of the second high temperature superconducting component is substantially inverted triangular.

12. The cable of claim 3, wherein the overlap segment has a critical current at least 85% of the lesser of the critical currents of the first and second high temperature superconducting components.

13. The cable of claim 3, wherein the overlap segment has a critical current at least 90% of the lesser of the critical currents of the first and second high temperature superconducting components.

14. The cable of claim 3, wherein the overlap segment has a critical current at least 95% of the lesser of the critical currents of the first and second high temperature superconducting components.

15. The cable of claim 3, wherein the overlap segment has a critical current at least 99% of the lesser of the critical currents of the first and second high temperature superconducting components.